



# ***NDCEE***

National Defense Center for Energy and Environment

## **Promoting Sustainability Through BioPreferred Purchasing**

**Joint Services Environmental Management (JSEM)  
Conference and Exposition  
May 5-8, 2008**

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**DoD Executive Agent**

Office of the  
Assistant Secretary  
of the Army  
(Installations and  
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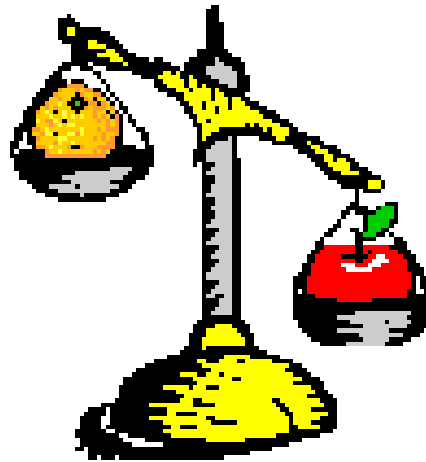
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# Overview

- Life Cycle Assessment (LCA) as an approach to defining or evaluating trade-offs for sustainability
- BEES as an LCA tool for sustainability in BioPreferred Procurement

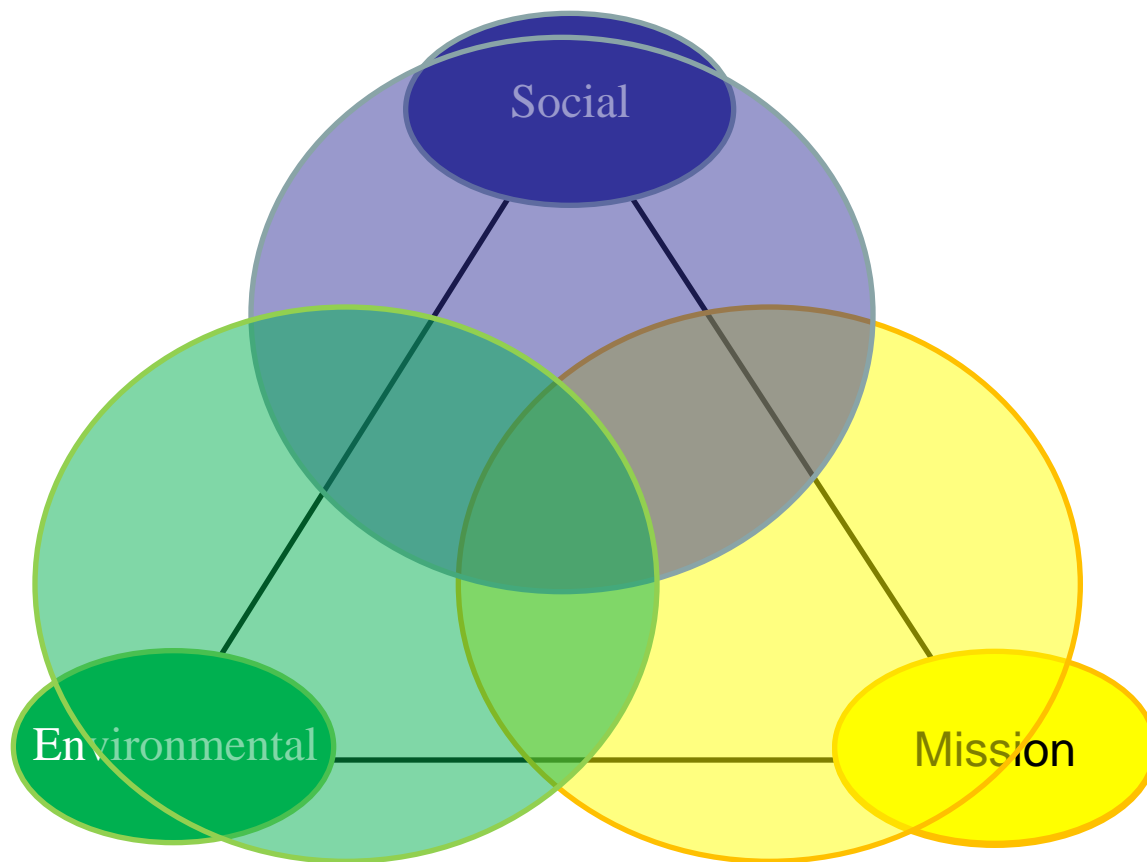
# What is Sustainable?

## YOU Decide!!!

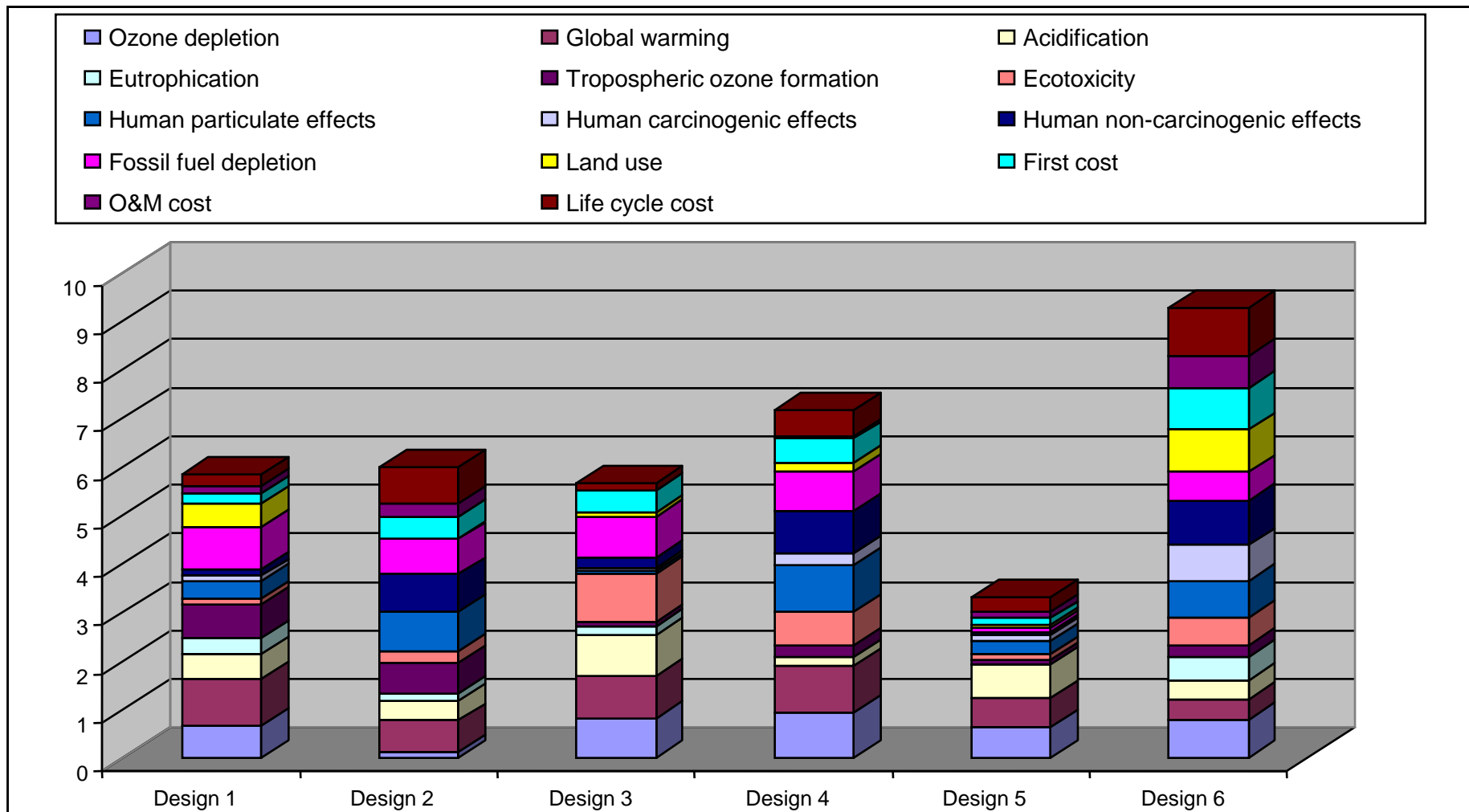


# Life-Cycle Assessment (LCA)

- LCA supports decision making for Sustainability



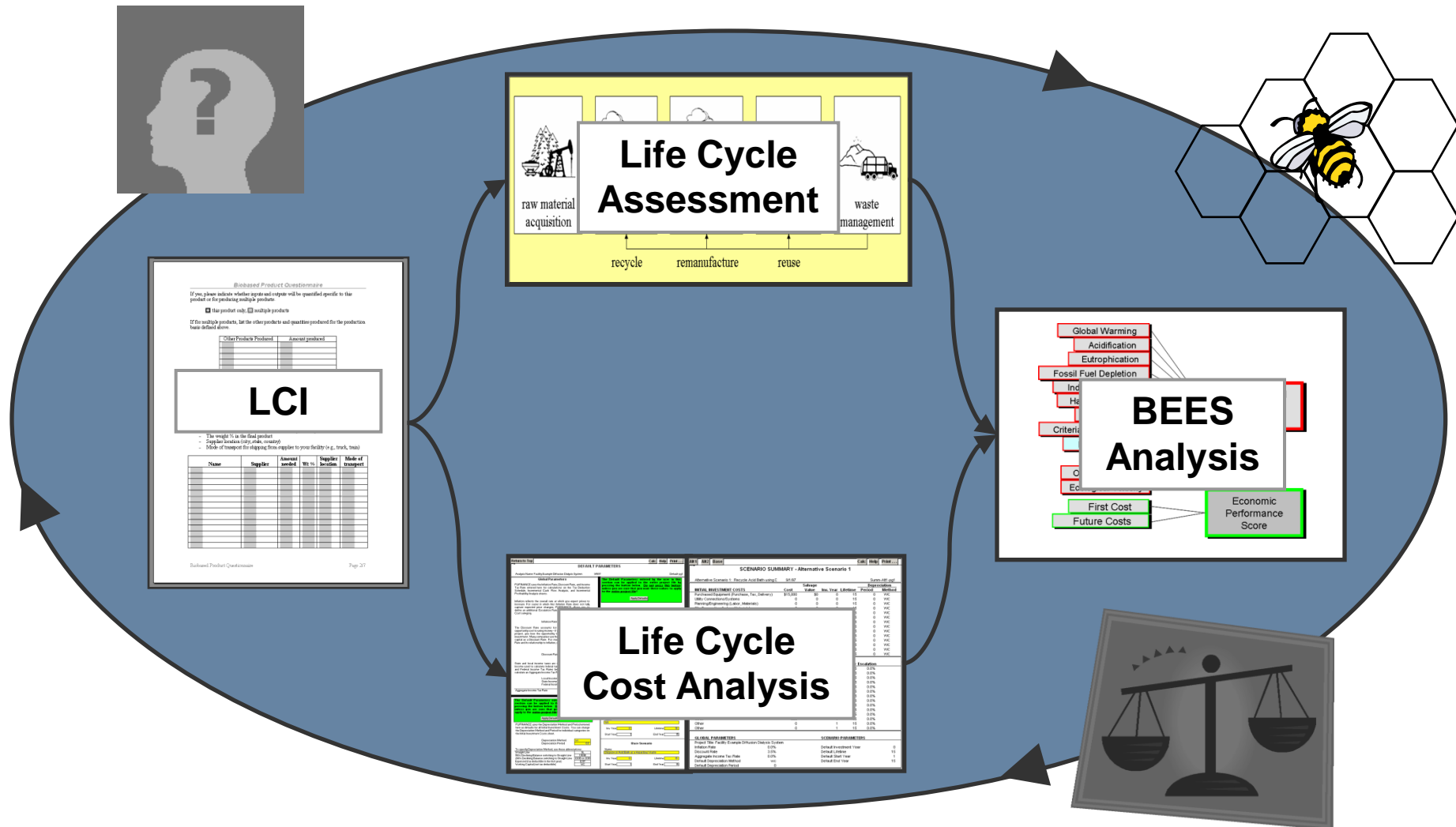
# Evaluating Trade-Offs



# LCA for BioPreferred Procurement

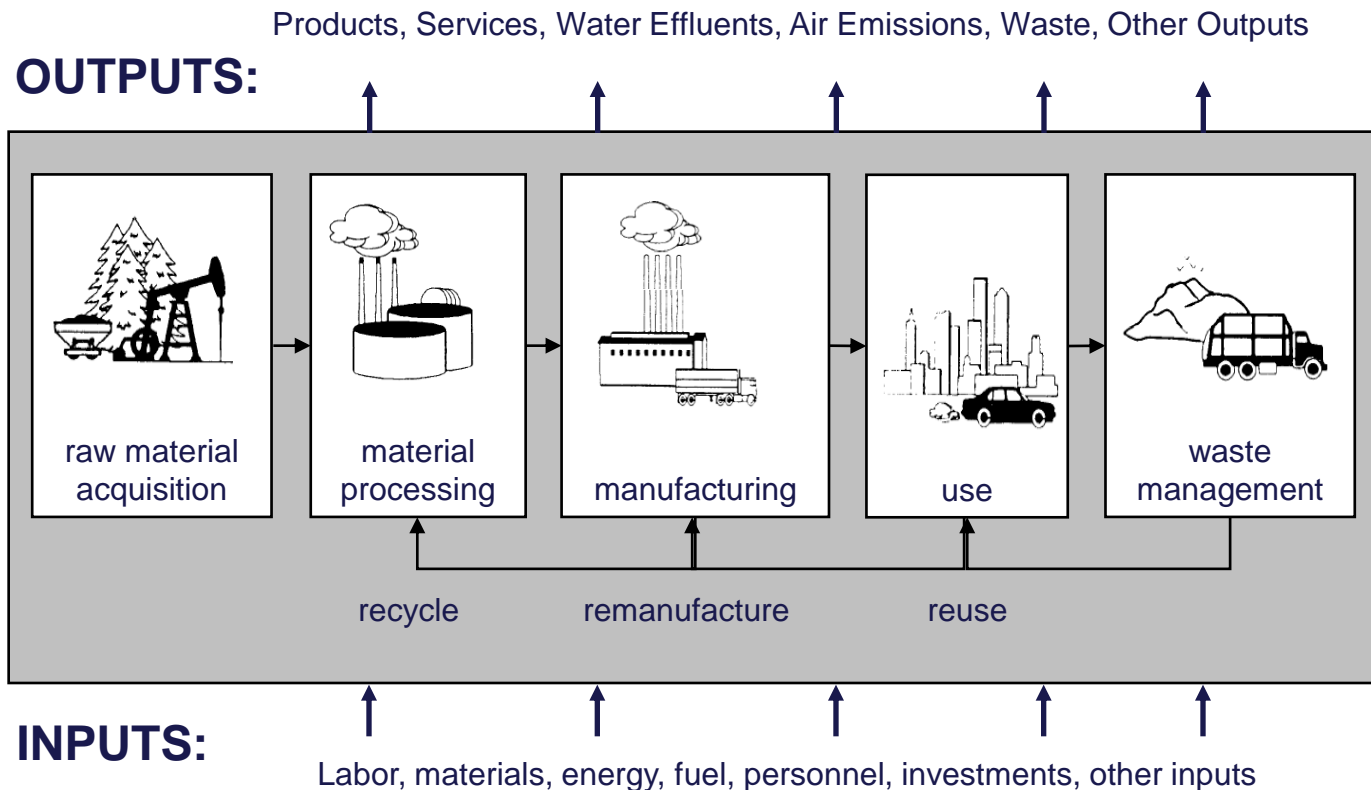
- Decision Support for Procurement Officers in Evaluating Alternatives
  - Bio-Content Testing
    - Iowa State University
      - ASTM D6866-04
  - Life-Cycle Assessment
    - National Institute of Standards and Technology (NIST)
      - Building for Environmental and Economic Sustainability (BEES)
        - » Using existing industry standards

# Framework – Evaluating Alternatives



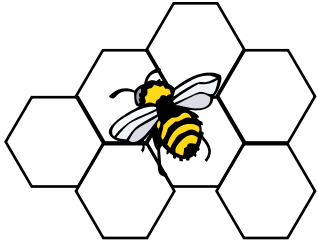


# Life Cycle Assessment



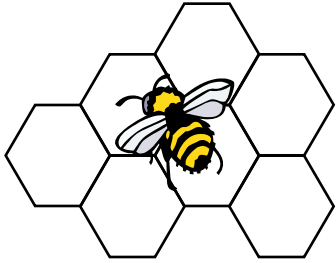
# Life Cycle Cost Analysis

- An economic evaluation tool for estimating the total cost of acquisition and ownership of a system over its full life, including the cost of acquisition, installation, operation, support, decommissioning, and disposal.

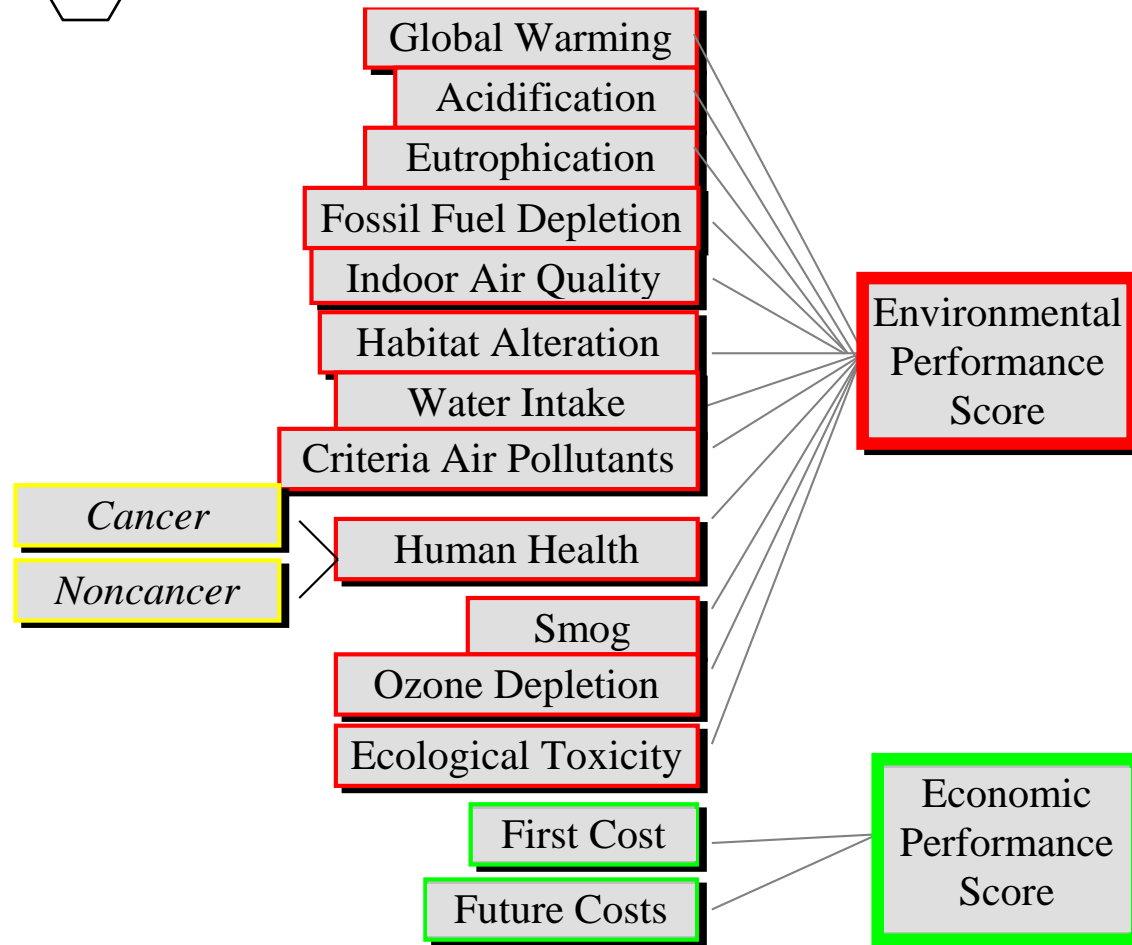


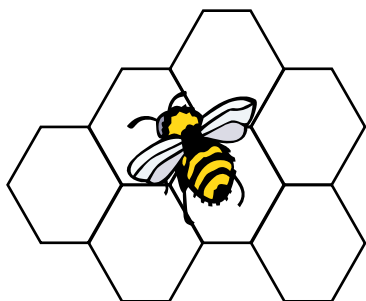
# The BEES Model

- BEES = Building for Environmental and Economic Sustainability
- Developed by National Institute of Standards and Technology (NIST)
  - Systematic methodology for selecting building projects
  - Methodology now applied to evaluate biobased materials
- Based on Consensus Standards
  - Life-Cycle Costing (ASTM E917)
  - Environmental Life-Cycle Assessment (ISO 14040)
  - Multi-Attribute Decision Analysis (ASTM E1765)
  - Evaluating and Reporting Environmental Performance of Biobased Products (ASTM D 7075)



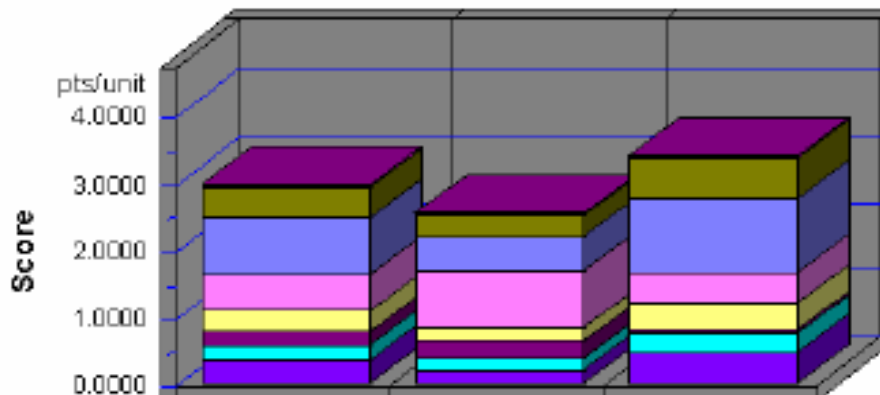
# The BEES Model



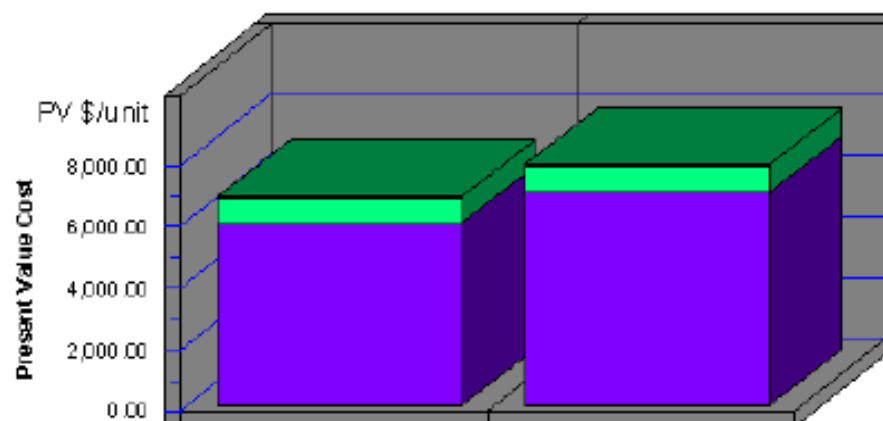
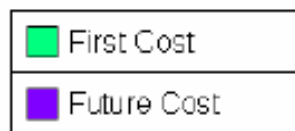


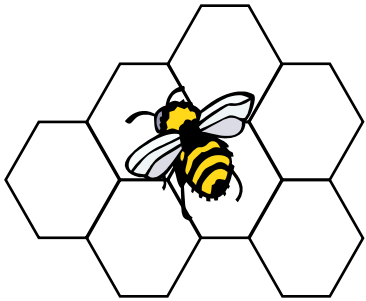
# BEES Results

## Environmental Performance



## Economic Performance





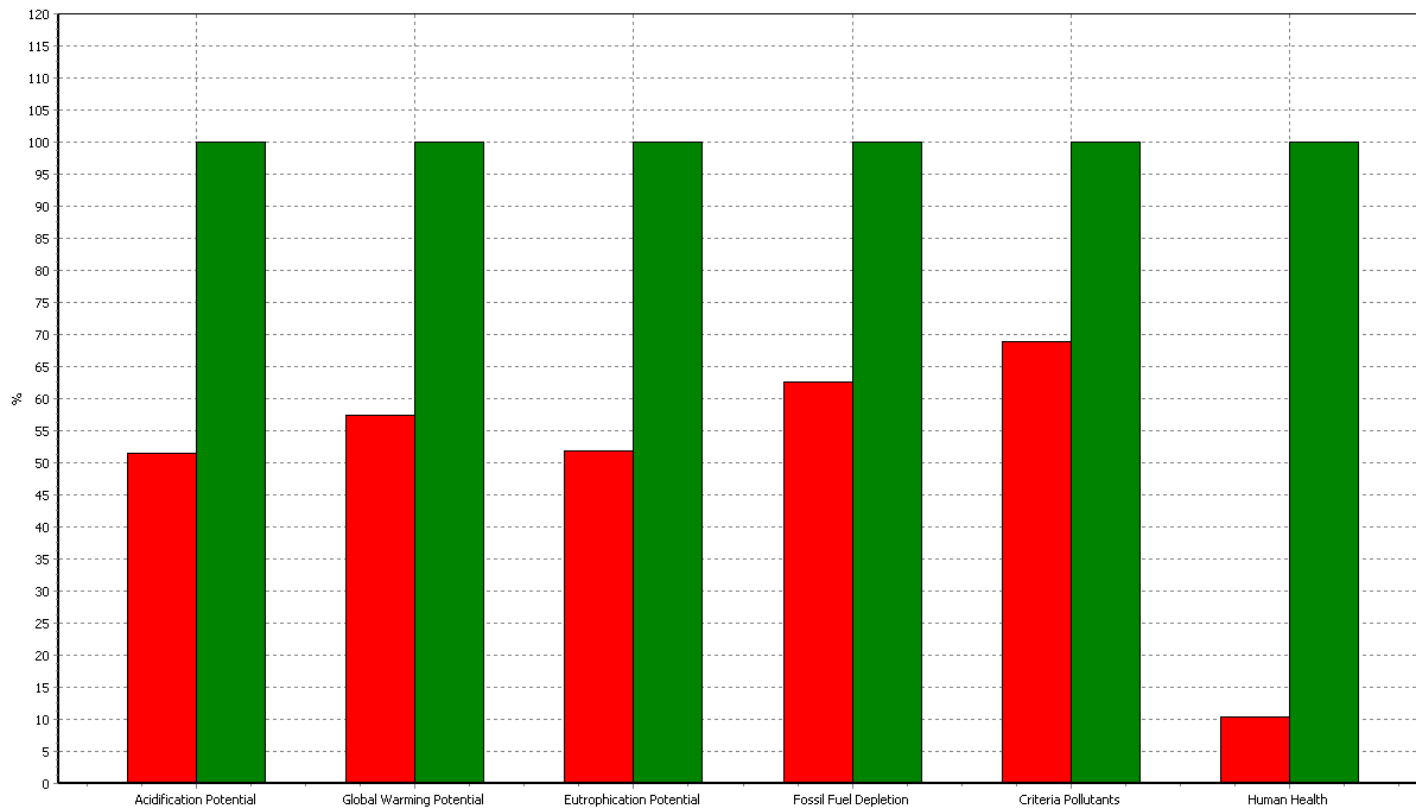
# Anecdotal Case-Procurement Perspective

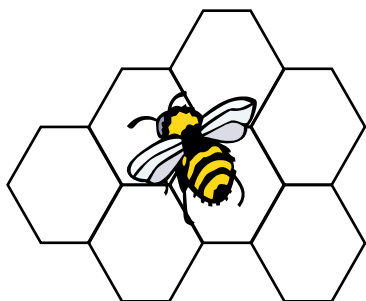


Product X



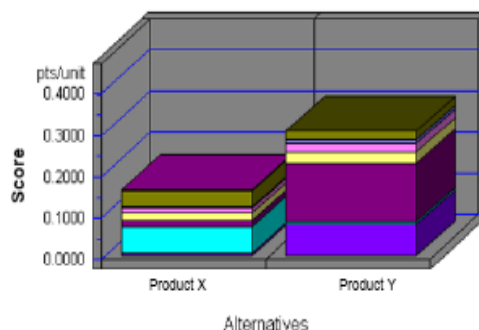
Product Y



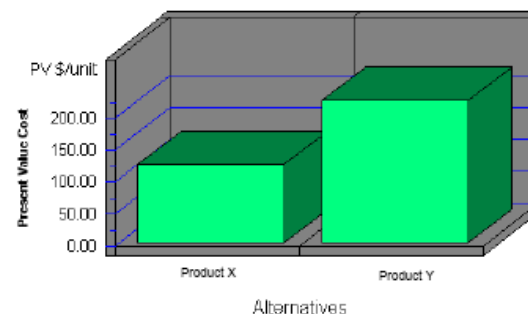


# Anecdotal Case

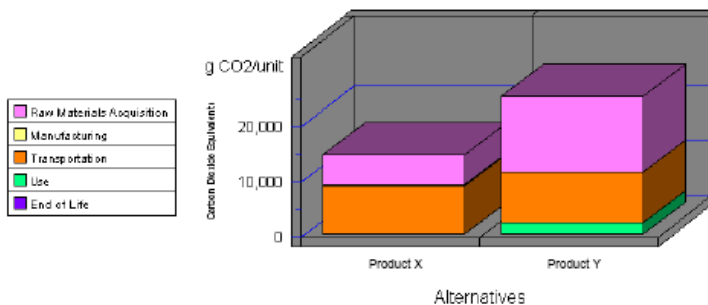
## Environmental Performance

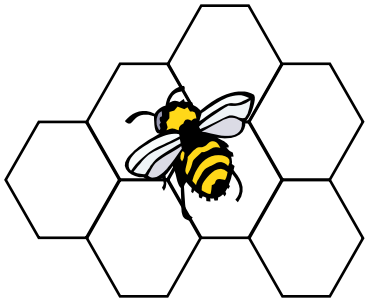


## Economic Performance\*



## Global Warming by Life-Cycle Stage





## Summary

- LCA is a powerful decision making tool
- BEES is an LCA tool that can help federal procurement officers make better decisions.
- It is difficult to accurately forecast life cycle impact
- There are usually trade-offs between different alternatives



# Questions

## Evaluating the Environmental Impact, Cost, and Performance of Biobased Alternatives

# Contact Information

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